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DREER'S

HINTS ON THE GROWING OF BULBS



A BOOK FOR AMATEURS

WRITTEN BY OUR OWN EXPERTS AND INCLUDING
A NUMBER OF CULTURAL NOTES BY THE WELL
KNOWN HORTICULTURAL WRITER
MISS IDA D. BENNETT
AND OTHERS

PUBLISHED BY
HENRY A. DREER
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HINTS ON THE GROWING OF BULBS

TO the lover of flowers there is no class of plants so much prized as those which are produced from bulbs. The reason is easily found because within the bulbs are stored all the future glory of leaves and flowers, only requiring the simplest culture to develop them in their highest perfection. Success is therefore the rule.

Another reason why bulbs are prized so highly is because a large part of them produce their flowers in very early spring when the rest of nature is asleep. Then it is that a clump of Snowdrops, Scillas, or Chionodoxas impart to the garden an air of warmth and cheer that cannot be accomplished in any other way. Following these modest flowers come the showier Crocus, Narcissus, Hyacinths, Tulips, etc. in all their dazzling colors, keeping up a continuous display well into the summer. With no other material can be secured such a wealth of charming flowers of infinite variety of form and coloring, with so little trouble and at so small an outlay.

To succeed with bulbs it is necessary to begin right by getting sound bulbs of good size, and we would warn intending purchasers against buying cheap, undersized bulbs, and expect the fine results obtained from such as we offer. Our sources of supply are the best in this country and abroad, the leading growers of the world having for years supplied us with their choicest stock.

When to Plant.

To the beginner we would emphasize the fact that autumn and not springtime is the time to plant all kinds of spring-flowering bulbs. The greater part of the bulbs described in this book are ready to ship by the second week in September. Some sorts do not mature until October and November. Orders for all sorts should be placed as early as possible and the various varieties can be forwarded as they mature.

As a general rule the bulbs should be planted in October and November so that the roots may make a good growth before cold weather sets in; but we have seen splendid results

from Tulips, Hyacinths and other bulbs that were not set out until along towards the close of December, but as the ground is frequently frozen by the middle of November it is much safer to plant earlier. Bulbs of all kinds require a moderately rich soil that has been well manured for previous crops, or else apply well-rotted cow or sheep manure or bone meal; fresh manure is injurious to bulbs. The soil should be well drained and no good results can be obtained without free drainage.

In planting, the bulbs should be placed from an inch to four inches or more below the surface, according to the size of the bulb. A good rule to go by is to cover the bulbs with soil one and a half times their own depth. When the surface of the ground freezes hard the bed should be covered with three or four inches of leaves, litter or strawy manure, which should be removed in early spring. Too early and heavy covering is liable to start top growth prematurely, which would likely be injured in March by freezing and thawing. After flowering, if the beds are wanted for late spring plantings, take up the bulbs, tops and roots, and "heel in" in a trench in some corner of the garden until the bulbs mature, which is indicated by the leaves turning yellow and drying, after which they should be lifted and spread out in an airy place to dry and kept in a cool, dark place until time for replanting the following autumn.

To the above general directions for outdoor culture we are pleased to add the following article written for this book by the well-known horticultural writer Miss Ida D. Bennett.

Spring-Blooming Bulbs.

The hardy spring-blooming bulbs form one of the most valuable of all the garden's assets. The original investment increases in capital as well as returning a royal dividend in bloom and fragrance with the recurrence of each period of bloom. Moreover, they are negotiable investments, as they may be lifted and transferred to a new home when the changes of business make such a flitting necessary, with no loss of capital and often much to the benefit of the individual members of the planting.

There are so many varieties of blooming bulbs and so many of them of such simple culture that the least experienced need not hesitate to undertake the growing of at least a few.

For outdoor culture of the various sorts the conditions of soil preparation, fertilizing and general culture are much the same,

and given the knowledge of the requirements of the more exacting and the less particular ones fall into line naturally.

The most satisfactory soil for growing bulbs is a fibrous loam, well supplied with sharp sand. It should possess good natural drainage. I have not found low, damp spots favorable for growing even that least exacting of bulbs—the *Narcissus Poeticus*, nor do they do well in very shady corners, though the earlier bloomers will do well under trees where the foliage does not mature until the season of bloom is passed and where the sunshine reaches the bulbs some time during the day.

Where the soil is of clay, or still worse of hard pan, it will be really necessary to remove it and substitute in its place some good garden or meadow soil. Sods thrown in a heap and allowed to decay make the finest kind of soil for beds and with it may be mixed a moderate quantity of old well-decayed manure, or, better still, the lower part of the bed may be filled with this mixture but the clear earth used in that portion with which the bulbs will come in immediate contact. Fresh manure should never be used in a bulb bed.

Sand is, perhaps, the special guardian and friend of all kinds of bulbs, and its liberal use should always be resorted to when there is any cause for doubting the success of a planting.

Where old, well-rotted manure is not available, bone meal is a very satisfactory substitute.

The best time for planting spring-blooming bulbs is, of course, in the fall, as soon as they can be secured, and in this connection it is not amiss to suggest that it is well to place one's orders early, in order that one may be promptly served and have first choice of the bulbs as they come from the growers. Tulips, *Narcissus*, Hyacinths and other spring bulbs are the first to arrive in this country, and may usually be had in September, and it is an advantage to get them planted early so that they may make some root growth before the ground freezes, but if one is not able to plant early, this fact should not deter one from planting late as very excellent results very often follow very late planting; especially is this true of the Japanese Lilies, which I have sometimes planted as late as Christmas with excellent results, though it was necessary to break the ground with an axe in order to do this. However, if one is anticipating the planting, a few inches of rough litter will keep the ground open for a reasonable time.

A Border of Hardy Bulbs.

Volumes have been written about the delights of the Hardy Perennial Plant Border, and no garden of any pretention can be called complete without a liberal space being devoted to these charming, old-fashioned flowers. As a rule, such borders include in the foreground clusters of hardy bulbs such as Daffodils, Snowflakes, Squills, Glory of the Snow, Grape Hyacinths, Snowdrops and others, many of which are in full bloom in March and April before the other plants in the bed have awakened from their winter's rest, and serve to make the border interesting from the time the last snows are gone until the other plants come into active growth and bloom. We feel sure that a border devoted exclusively to hardy bulbs is one of the most fascinating and interesting that can be made. There are many places, even in the smallest gardens where such a border might find room. The majority of the hardy bulbs are so easy to grow, the returns so certain, and the blooming period so extended that those who are fortunate enough to have such a border would not care to dispense with it at any cost, and we hope that many of our patrons will take up this suggestion.

Little or no preparation is necessary, merely select a well-drained strip of ground, preferably in a sunny position, dig it over a spade deep, adding some bone meal or other high grade fertilizer and plant the bulbs in clumps or clusters with a foot or more of space between each cluster. This should be done any time during October or November. The short growing, early flowering sorts should, of course, be planted along the front, the taller, later flowering kinds in the middle and rear. The more species and varieties that the border contains the greater the interest, and along the front should be used such dwarf sorts as Anemones, Crocus, Chionodoxas, Eranthis, Iris Reticulata, Puschkinias, Ranunculus, Scilla Sibirica, Snowdrops and Triteleias. The middle part of the border can be filled with Narcissus, Alliums, Erythronium, Fritillaria, Ixias, Jonquils, Leucojum Muscari and Sparaxis, while the back portion may be planted with the taller growing sorts, such as Cottage Garden Tulips, Anthericum, Crown Imperials, Spanish and English Iris, Lilies of various kinds and Scilla Campanulata. The clusters or groups should contain from six to twenty-five bulbs each, the larger the number the more effective they will be, the bulbs planted from two to four inches deep according to size, and from three to six inches apart. As soon as a

crust of frost has formed over the surface of the bed two or three inches of leaves or strawy manure should be spread over it. This will prevent the surface from quick freezing and thawing, the effect of which might heave the bulbs out of place. This covering should be removed when spring opens. Such a bed will have something in bloom in it from March to June. Along about the middle of May many of the bulbs will have finished flowering and the foliage turned yellow, which shows that the bulbs are ripe. Such foliage can then be cut off and the surface of the bed raked over and sown with one or a variety of some shallow rooting, summer flowering annual, such as *Alyssum*, *Calliopsis*, *Eschscholtzia*, *Petunia*, *Portulaca*, or *Verbena*. Any of these will flower in a few weeks from time of sowing and keep the border gay until frost. All of the above annuals require little or no attention, and it is well not to water such a bed even during the driest weather as artificial watering seems to excite the bulbs into premature growth, which is not desirable. After a crust of frost has formed over the bed, it should be covered with leaves or manure as before, and the bulbs may be expected to come up in early spring with renewed vigor, many of them giving finer returns the second year after planting.

The cost of making and planting such a border as here described is trifling, and it has to be remembered that such a planting will last for a number of years without disturbance. Should any of the varieties exhaust themselves they can be replanted at small cost.

Bulbs in the Grass.

One of the most delightful phases of bulb growing is that of the cultivation of the hardy varieties in the grass. Nowhere else do they look so well. In addition some of the bulbous plants thrive better in grass than in a cultivated border, and nearly all hardy bulbs will do well in grass if the place is properly prepared for them by removing a portion of the turf, loosening up the earth beneath and adding a little fresh soil and bone meal where it is poor, and then replacing the turf firmly. One thing must be remembered, and this is that on no account must the grass be cut until the plants have ripened their leaves. This is shown by the foliage becoming yellow. Neglect of this is the cause of much disappointment, and no further returns can be expected from bulbs, the foliage of which has been ruth-

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lessly cut off while still in a green growing condition, and for this reason it is advisable that bulbs should not be planted where a neatly kept grass plot is wanted early in the year.

In planting, the bulbs should not be arranged in regular lines, but in clusters or informal groups. A good plan is to throw the bulbs down from the hand and plant them where they fall. If the conditions are at all favorable such bulbs as *Crocus*, *Chionodoxa*, *Scillas*, *Eranthis*, and many others may be expected to produce a bountiful crop of flowers for a number of years.

Planting Table.

The table below shows the number of bulbs required to fill a circular bed of the dimensions given. In planting begin outside row—where 6 inches apart, 3 inches from edge of bed; where 12 inches apart, 6 inches from edge of bed.

Diameter of Bed	Planted 4 inches apart	Planted 6 inches apart	Planted 12 inches apart	Planted 18 inches apart
3 feet	63	28	7	
4 "	108	48	12	6
5 "	180	80	20	8
6 "	252	112	28	13
7 "	342	152	38	17
8 "	450	200	50	23
9 "	576	256	64	28
10 "	720	320	80	36
11 "	855	380	95	42
12 "	1017	452	113	50
13 "	1188	528	132	59
14 "	1377	612	153	68
15 "	1584	704	176	78
16 "	1809	804	201	89
17 "	2034	904	226	100
18 "	2286	1016	254	113
19 "	2549	1132	283	126
20 "	2826	1256	314	139

A square bed will take about the same number of bulbs. For an oval bed, add length and breadth and divide by 2. For example, an oval 7 feet long by 5 feet wide will require same number of plants as a circular bed 6 feet in diameter.

INDOOR CULTURE OF BULBS

Bulbs intended for blooming during the winter can be planted from September until November—the earlier the better—in pans, pots or boxes, and be left in the open air or cold frame covered with a few inches of ashes or soil, until the earth begins to freeze and then placed in a cool greenhouse, cellar or room, at a temperature of fifty degrees. They will need occasionally, moderate watering after they are brought inside. Or the pans, pots or boxes may be placed at once, after potting, in a cool, dark cellar, watering well and cover the same as above. The whole success of pot culture depends upon getting the roots well established in the pots, at a low temperature of say 40 to 50 degrees, before you begin to force the tops at 60 degrees or over. After this the bloom is easily developed by giving light and water, and one can have a supply of flowers from Christmas until after Easter by regulating the time of bringing them to the light.

Soil for Pot Plants.

It used to be thought and taught that nearly every kind of plant needed a soil specially prepared for it. We have learned that this was a mistake. Ninety-nine out of every hundred plants that can be grown in the house will do well in any good soil that is not too heavy and compact to allow water to run through it readily. The soil prepared after the following formula will answer the needs of the flower grower excellently: One part ordinary loam. One part leaf mold or turfy matter. Mix these together and add enough sharp sand to make the whole so friable that it will fall apart readily after squeezing it in the hand.

The turfy matter advised as a substitute for leaf mold is obtained by turning over sod and scraping away that portion of it which is full of grass roots. This gives you a light, spongy soil, rich in vegetable matter and almost as valuable as genuine leaf mold from the woods.

A sprinkling of bone meal can be added to give richness if thought advisable.

Drainage. Every pot more than three inches across ought to have something in the way of drainage before filling it with soil through which surplus water can pass. If the hole in the bottom becomes closed there is no outlet for this water, and the soil is soon soured by it. This results in diseased roots, and

anything that interferes with healthy root action will eventually destroy the plant unless the difficulty is promptly remedied. An inch of drainage is enough for a five-inch pot. For a ten-inch pot three is not too much. For intermediate sizes use proportionately. Old flower pots or brick broken into pieces as large as a walnut make excellent drainage material. It is a good plan to put a layer of sphagnum moss or fine roots over the drainage material before filling the pots with soil, to prevent the latter from being washed down and closing the cracks and crevices through which the water will drain off. A piece of sod will answer if there is nothing better at hand.

Bulbs in Prepared Fibre.

Within the last year or two this material has become very popular for growing bulbs in, and is especially adapted for use in the home, being clean, odorless and nice to handle, and as it is light in weight can be sent to a distance at small expense for transportation.

It contains all the necessary plant food to sustain and perfect almost all kinds of bulbous plants, but is particularly adapted for the growing of Hyacinths, Tulips, Narcissus, Crocus, Callas, Freesias, Muscari, Scillas, Snowdrops, Spiræas and Easter Lilies.

Before using it should be thoroughly moistened and the bulbs planted in the same way as if soil were used, taking care not to pot so firmly as to prevent the fleshy roots of the bulbs from penetrating it readily. A special feature of this material is that bulbs can be grown in it in jardinières, fern dishes, and other nonporous receptacles without drainage. In such cases it is necessary to put a few pieces of charcoal in the bottom of each receptacle to take up any impurities, and after watering, the jardinières or dishes should be turned on their side to allow any surplus water to drain off.

The treatment after planting in this material is exactly the same as recommended for the same bulbs when planted in soil.

The Value of a Cold Frame for Bulbs.

The function of a cold frame is to ward off cold winds, to keep the ground clear of snow, and in the spring to increase the feeble heat of the slanting sunbeams, and thus foster plant growth.

The construction of the cold frame is very simple. The back

board is usually twelve inches and the front eight inches wide. The two are connected by a tapered board twelve inches wide at one end and eight inches at the other. Standard sash are three by six (3 x 6) feet, and it takes a box of six by eight (6 x 8) inch glass to glaze three sash. We can furnish sash at \$1.50 each unglazed, or \$3.25 each glazed. The frame work can be readily made by a local carpenter or anyone handy with tools; and when complete the frame is set in a sheltered, well-drained position, usually near the house.

To the lover of flowers the frame is a real necessity for the carrying of many things through the winter, and few people indeed have ever fully developed the possibilities of pleasure possessed by an ordinary glass-covered frame.

Bulbs of all kinds are so easily grown that a complete failure is practically unknown when grown in the open air and seldom recorded when they are potted for blooming indoors through the winter months. As a rule partial failure is invariably caused by the attempt to grow them under conditions unfitted to their modest requirements. The majority of modern dwelling houses are heated by a furnace or boiler in the cellar or basement, frequently making it the warmest place in the house. Such a cellar is not a good place in which to place bulbs to form their roots. The old-fashioned house without heat in the cellar and in which is usually stored the winter supply of potatoes, etc., or the modern house with a cold part of the cellar partitioned off from the heated section is an excellent place, provided there is at all times a good supply of fresh air. The ideal conditions for most bulbs in which to form their roots, on which so much of future success depends is in a cold frame. A few inches of coal ashes should be placed in the frame as a preventive against worms, and as soon as the bulbs are potted up the pots can be placed on the surface or partially plunged in the ashes, after which soil, ashes, or peat moss may be thrown over them to a depth of three or four inches.

Imbedded in this way, the bulbs are kept uniformly moist and cool and make a vigorous root growth. It is not necessary to place the sash on the frame until hard frost comes, usually along in November, but they should be put on during sleety or snowy weather, and removed entirely in clear weather as long as the temperature is above the freezing point. By the end of November some of the sorts wanted for early blooming, such as Roman Hyacinths and Paper White Narcissus can be removed to the house and the others as wanted. After the frame

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has been emptied it should be cleaned out and prepared for the sowing of seeds in early spring. There is really no time of the year that a cold frame is not of some value in the garden.



A PAN OF DUTCH MINIATURE HYACINTHS.

DREER'S

Hints on the Growing of

BULBS

Arranged in alphabetical order for easy reference

Alliums.

A very large family of bulbous plants, including such important vegetables as the onion, garlic, etc., but we are only interested here in the ornamental flowering members of the genus. Of these the varieties Neapolitanum and Hermetti Grandiflorum are of special value for pot culture, the first named producing large, loose umbels of pure white flowers on stiff stems 18 to 24 inches high. The other is similar but of dwarfer habit and somewhat smaller in all its parts. Six or more bulbs of either sort, which are quite small, can be put in a six inch pot or pan, and with the same treatment as given to Hyacinths or Narcissus will flower finely in the window early in the year, adding the charm of variety to the usual line of winter flowering bulbs. They are also desirable for planting in the open border, but should be given the protection of a few inches of litter through the winter.

Allium Aureum, the Golden Lily Leek, is a perfectly hardy species, growing but six inches high and bearing in June large clusters of brilliant yellow flowers which last in perfection for a long time. A clump of a dozen or more bulbs in the border makes a patch of color like a bit of sunshine, and once planted require no further care, and for this reason are well adapted for naturalizing.

Allium Azureum also flowers in June, supporting a ball-shaped umbel of azure blue flowers on the summit of a wiry stem two feet or more high, and makes a pretty addition to any hardy border.

All of the Alliums will do well in any ordinary garden soil and prefer a sunny position. The bulbs are comparatively small and should not be planted more than two inches deep, and can be supplied in a dormant condition any time from September until November.

Alstromeria (*Chilian Lily*).

There are few finer garden flowers than the Chilian Lily, whose brilliant colors, varying from rose-white to deep orange and red are great attractions, flowering from July to September on stems two feet high and highly prized for cutting. The tubers, which are not in proper condition to send out before November, should be planted then or early in the spring. They prefer a rather light, rich soil and a well-drained, sunny position, as any moisture about the roots during the winter would be fatal. They should, however, have an abundance of water while growing. A border along the front of a wall having a warm exposure is an ideal location for them. The tubers should be planted not less than six inches below the surface, and if planted in the autumn they should have the protection of four or five inches of leaves or litter through the winter.

Amaryllis or Hippeastrums (*Knight's Star Lily*).

The Amaryllis is pre-eminently a window garden plant for the amateur, producing under the simplest conditions one, two or even three spikes, which are crowned with from three to six gorgeous blooms, which last long in good condition.

As a rule Amaryllis are supplied during the winter and early spring in the form of dormant bulbs. They should be potted as soon as received in pots of a size about one inch larger in diameter than the bulbs. Plant the bulbs so that only the thick part is covered with soil; the long neck must be fully exposed. Any good garden soil will grow them, but preferably use two parts of good, fibrous loam to one part of well-decomposed cow manure and sufficient sharp sand to make it loose and friable. Water sparingly until active growth begins, but after the plants are in full leaf they must be very liberally supplied with water, taking care at all times to provide ample drainage.

In the summer the plants if well established should be repotted into larger pots and will be benefited by plunging the pots in the open border where they will be exposed to full sunshine. In the autumn, after they become checked by frost, store them dry in the pots in which they have been growing in a cellar or other place in which potatoes would keep in good condition. They should be looked over occasionally, and any showing signs of new life must at once be brought to the light. If they are stored in the pots in which they have grown the previous season, no repotting is necessary at this stage, though

an occasional watering with liquid cow manure, or our Peerless Plant Food, will help to increase the beauty and size of the flowers.

Amorophallus Rivieri.

A particularly handsome plant for growing either in clumps or as a solitary specimen. The flowers appear before the leaves and rise to a height of two to three feet and resemble a gigantic Black Calla. This is soon followed by the massive, tropical-looking leaves supported by thick, beautifully marbled stems. The bulbs should be planted in May in a warm, sunny situation, in extra rich soil, and as soon as the leaves have been killed by frost should be lifted, dried and stored in a warm place until time for replanting.



ST. BRIGID ANEMONE.

Anemones (*Windflower*).

A very large family including spring, summer and autumn blooming species. Our notes here are confined to the varieties of Anemone Coronaria, the Poppy or Crown Windflower, which throughout Europe has been one of the most admired garden flowers from earliest times, and which is so wonderfully varied in its form and coloring and is one of the most effective cut flowers during its blooming period in May.

They are not considered reliably hardy north of the Potomac except in favored, protected borders. Our experience shows that when the roots are planted in September or early October they are liable to start a top growth quickly which is sure to be frozen off in mid-winter, but even then they are almost sure to make a second growth in spring and produce a very fair crop of flowers. The best plan for those who do not have a cold frame or care to bother with them indoors is to delay planting until November or December, or the roots may be kept

perfectly dry and planted out as soon as danger from frost is past in the spring.

They thrive in anything but a heavy clay soil and should have a sunny position. The tubers are usually set from six to seven inches apart and two inches deep. Miss Bennett contributes the following notes on their culture:

"Anemones are especially useful for forcing indoors. Plant in good rich soil, placing six or eight bulbs in an eight inch bulb pan and place in a cool cellar until top growth begins, when they may be brought up and placed in a sunny east or south window. Anemones require more water than most other forcing bulbs and should be watched while in the cellar and kept moist but not soggy. After bringing to the light more water may be given, and after bloom starts, water should be kept standing in the saucer all the time. As the Anemone gives a succession of flowers it may be kept continuously in a sunny window until through blooming, or until its season of growth is past, as the foliage is fern-like and attractive, and the bulbs ripened naturally can be used again. If one has a preference for certain colors, it is best to select named sorts, adding a few of the fine St. Brigid Varieties.

"For open ground culture their treatment is similar to that required by the Ixias when planted in the fall, but unlike most spring blooming bulbs the Anemones may be held over until spring before planting and then planted as soon as the soil is in condition, setting them two inches deep and six inches apart."

Anthericum (*St. Bruno's Lily*).

Miss Ida D. Bennett contributes the following:

"While blooming a month or more later than the last of the spring bulbs, appearing in mid-June, should be included in one's fall purchase as few flowers possess the delicate charm of these graceful, bell-like flowers.

"A well-established plant throws up several stalks of small, pure white Lilies, resembling in appearance miniature Candidum Lilies. The long, straplike foliage resembles somewhat that of the Narcissi and is very abundant.

"Roots planted in the fall will become well established and bloom the first summer, while spring-planted roots often fail to bloom and occasionally disappear for a year after planting, but this is not a cause for much uneasiness as they are quite sure to appear with well established vigor the following spring,

and once established are a very persistent and dependable bloomer.

"The roots should be planted about three inches deep and a foot apart in clumps of three or more, or in triple rows, giving them an open, sunny position, but a somewhat sheltered one. A mulch of lawn clippings about the roots is beneficial in summer, or a position among other plants, which will protect without shading or crowding it, will be found congenial.

"I know of no plant which I more cordially recommend for the permanent garden. The new Giant Anthericum much exceeds in height of stalk and size of bloom the older forms, producing thirty inch stalks of very large flowers, and this should be the variety selected.

"Planted in the foreground of beds of Lilies and associated with the coral lilies—*L. Tenuifolium*—the effect is charming, as they add the softening effect which the rather meagre foliage of the Lily lacks."

Apios (Tuberous-rooted Wistaria).

A valuable, hardy tuberous-rooted climber, resembling in miniature the common Wistaria in vine and foliage, and having clusters of rich, deep purple flowers, which have a strong, delicious violet fragrance. It grows to a height of eight to ten feet and blooms profusely. Two or three bulbs should be planted in a cluster to produce a mass of vines and flowers. The dormant tubers can be supplied and planted at any time during the spring, placing them about two inches below the surface.

Tuberous-rooted Begonias.

The following cultural notes from the pen of the well-known writer Eben. E. Rexford, and written expressly for us should enable anyone to grow these beautiful plants:

"Few plants are better adapted to the summer decoration of the window garden, the veranda, and the conservatory than the Tuberous Begonia. It is a constant and prolific bloomer when well grown, wonderfully rich and varied in coloring, and so easy to grow that all persons ought to succeed with it after familiarizing themselves with its habits and requirements.

To begin with, it likes a certain kind of soil, and if it cannot have that it often fails to give satisfaction. Then, it likes a certain amount of water. If it gets too little or too much it

drops its buds, or the plants fall apart joint by joint. But give it the soil that suits it and water it properly and it will surprise and delight you with the prodigality of its bloom from June to October, and you will wonder how you ever came to think it a difficult plant to grow.

"A soil that will grow it to perfection is made up of one part leafmold—or, the very best substitute for it that I have any knowledge of, turfy matter scraped from the bottom of old sod—one part garden loam, and one part sand. Mix these well together and you have a compost that is friable, porous and well adapted to any plants having fine, fibrous roots. I have purposely omitted the mention of manure because I have found it more satisfactory to apply plant food when needed, and in such quantities as seem to be required, than to make the soil very rich with it from the start.

"When the tubers of these Begonias are procured and there are no sprouts in evidence, spread them out on moss, which should be kept moist and warm. Here they should be left until sprouts appear. If you have no moss at hand a piece of an old blanket or carpet will do very well, so long as either are thick enough to retain moisture. It is not absolutely necessary to sprout your tubers in this manner if you can tell which is top or bottom of them, but frequently they look so much alike on both sides that you cannot be sure which is which until sprouts appear, and it will not do to plant them wrong side up. Moisture and warmth soon start the tubers into growth, and as soon as you are sure about them you can put them into pots. I would give each tuber a five-inch pot, if grown singly. I prefer, however, to use three tubers to a seven-inch pot. The effect is stronger and in every way more satisfactory. Settle the tuber down into the soil to the depth of an inch. Water very cautiously until active growth begins, then increase the amount. But at no time during its existence will the plant require more than enough to make—and keep—the soil moist all through. Good drainage should be provided to guard against the dangers of overwatering.

"A good collection of Tuberous Begonias will afford the lover of fine flowers a vast amount of pleasure. Some of the single blossoms will be three or four inches across. The double ones resemble very double Camellias more than any other flower to which they can be compared. The flowers last well. What the Dahlia is to the outdoor garden that the Tuberous Begonia is to the window garden.

"There are several methods of keeping the tubers of these Begonias over winter. Some allow them to remain in the soil in which they grew in summer, allowing it to become quite dry. The pots are then stored away in a dark closet or room where the temperature will be low, but never down to the freezing-point. Here they are left until March. Then they are brought to the light and given water and warmth. As soon as they have sprouted they are put into pots of fresh soil and treated as advised above.



FRILLED TUBEROUS BEGONIA.

"Another method is to leave the tubers in their pots until all their foliage has died off. Then the soil is allowed to dry out, after which they are taken out of it, shaken clean and wrapped in paper, each tuber by itself. They are then put into boxes of perfectly dry sawdust, or bran, stored in a dry, frost-proof room until March, and then sprouted and potted as above.

"We would add to the above that they are now used extensively for outdoor planting. Give them a partially shaded position in a light soil and well drained position, and they will give more bloom than any other plant which will grow in such a place."

Boussingaultia Baselloides (*Madeira or Mignonette Vine*).

An old-fashioned popular vine growing ten to twenty feet high and covering a large space in a short time. Fleshy, heart-shaped leaves of a light green and bearing numerous racemes in late summer and autumn of feathery white flowers of delicious fragrance. In this latitude the roots are quite hardy, but it is advisable to protect them with a shovelful of coal ashes placed over them after the vine has been killed by frost. Dormant tubers can be supplied from January till June and may be planted out any time after the beginning of April, covering them with three or four inches of soil.

Caladiums.

No other summer foliage plant equals the Fancy-leaved Caladium in rich and gorgeous, yet soft coloring. All of the varieties are of marvelous beauty for the furnishing of the conservatory during the summer months, for window boxes, or even for outdoor bedding in shady or semi-shady positions. They are of easy culture. The soil should be rich and light; a mixture of equal parts of loam, leaf mold and thoroughly decomposed stable manure suits them best. The bulbs should be covered with about an inch of soil. Care much be taken in watering until active growth commences, when they delight in a liberal supply, but at all times providing them free drainage. The bulbs should not be started before the middle of March. Plant them in small pots of a size to conveniently hold the bulb, this varying with different varieties, some sorts producing but very small bulbs. As they start into growth and become well rooted, repot into pots one size larger, repeating this as the plants require it; the best effect is produced by planting three to five plants in a large pot; this should be done when they are ready for the first repotting. In the autumn, when they show signs of resting, water must be withheld and the pots containing the roots may be stored in a dry place where the temperature will not fall below sixty degrees.

The well-known Caladium Esculentum or Elephant's Ear is one of the most effective plants in cultivation for planting out upon the lawn, producing throughout the entire summer and autumn a rich, tropical effect. To obtain the best results the bulbs should be planted where they will obtain plenty of water and an abundance of rich compost. When fully grown it stands six to ten feet high, the immense, light green leaves three to four feet long by two and a half feet wide.

The bulbs may be planted directly in the bed as soon as the weather has become warm, usually about the end of May, or they may be started indoors in a warm place from the middle of March on and transferred to the open when the weather becomes suitable. As soon as the leaves have been touched by frost in the autumn, the bulbs should be lifted, the old stems cut off, and when thoroughly dried may be kept in any place where the temperature does not fall below 40 degrees until time for planting out another season.

Callas or Richardia

(*Arum Lily. Lily of the Nile*).

The White Calla Lily is one of the best winter and spring flowering plants for the window garden or conservatory. Its requirements are good rich soil, an abundance of water when in growth and a warm temperature. The dormant roots can be procured any time from August to November and a good-sized root will go nicely into a six-inch pot or three roots can be put in an eight-inch pot or pan, making a handsome specimen.

The soil should be, if possible, a compost of two-thirds good loam and one-third well-rotted cow manure with a dash of sand to keep it open. Ample drainage should be provided. Set the roots so that the crown or sprout is above the level of the soil.

Callas should not be placed in the dark like many bulbs, but can be put out of doors to root, being sure to bring them inside when the weather begins to get chilly, as the slightest frost will damage if not destroy them. As Callas require an abundance of water when making their growth, it lessens the labor of watering by keeping the pot in a saucer of water. After the flowering season is over, water should be gradually withheld and the pots finally turned on their sides and allowed to dry out. The roots can be shaken out of the old soil in August or September and repotted as before.

The Golden Yellow and Spotted-leaved Callas are not suitable for winter flowering, being really summer flowering varieties, and the roots of these should be procured and planted out in spring after all danger from cold weather is past. They are very democratic in their requirements and will do beautifully under the same conditions as Cannas or Geraniums, responding with a good crop of their handsome flowers and foliage to generous treatment consisting of good soil and no lack of moisture during their growing and flowering period, and on account of their love of moisture are frequently handled as sub-aquatics on the margins of ponds, basins, etc.



WHITE CALLA LILY.

Chionodoxas (*Glory of the Snow*).

Charming, very early spring blooming bulbs from the mountains of Asia Minor, and perfectly hardy in all parts of the United States. The varieties *Lucillæ* and *Lucillæ Gigantea* have large, clear blue flowers with white centers. *Sardensis* has flowers of a rich, deep gentian blue.

The flowers are borne in sprays on stems four to six inches high and come into bloom with the *Snowdrop* and *Siberian Squill*, almost as soon as snow has disappeared. Planted along the front of the hardy border or in front of shrubbery they make a very effective show and should be planted in such positions in generous quantity. The larger the planting the finer the effect, and as they come up year after year the first cost of the bulbs, which is trifling, is the only cost.

Bulbs of these can be supplied from September till November, and being quite small should not be planted more than two inches deep.

Colchicums (*Meadow Saffron. Autumn Crocus*).

These are of much value in the garden in autumn, and in large clumps or masses produce a splendid effect. They like a rather rich soil and a sunny position. As the leaves appear in spring the *Colchicum* should be grown among the grass or in the mixed border where the flowers can have the relief of surrounding foliage. The top of the corms or bulbs should be about three inches below the surface and from six to nine inches apart.

The bulbs usually arrive from Europe early in September and should be planted as soon after their arrival as possible, as they burst into bloom in a few weeks. The foliage appears in spring, remaining until mid-summer, followed by the flowers again in the autumn. A few bulbs placed in a bowl or saucer in a sunny window early in September, with or without water, will bloom almost immediately.

Crocus.

Charming bulbous plants, so well known as to need no detailed description. They are of the highest decorative value, either for planting in beds or borders, in grass, in the rock garden, etc. When planted in large groups or lines of distinct colors, the effect is very striking, and the bulbs are now offered so cheap as to justify their liberal use. They will grow in

almost any kind of soil, but prefer one of a rich, light, sandy nature. Plant about two inches deep and three inches apart. When Crocuses are to be planted in grass, remove the turf immediately above where they are to be planted, and stir the soil below thoroughly, adding, if it is poor, a little bone meal, and replacing the turf after the Crocuses are in position. Plants in grass or elsewhere must not have the leaves cut off before they have become yellow. Forgetfulness of this is responsible for the poor results often seen.



CROCUS.

They are invaluable for pot culture. To secure a succession of bloom, commence planting early in October, six or eight bulbs in a pot—the named varieties are best for this purpose, especially the new Hybrid sorts—using rich soil, placing the bulbs about a half an inch below the surface. Pots may then be plunged in ashes in the open or in a cold frame until the roots have nearly filled the pots and top growth has begun, when they may be taken indoors and gradually brought on in a higher temperature. They may also be grown in water, like the Hyacinth, or in damp moss, prepared fibre, or sand. The bulbs are usually in stock from the early part of September until December, but planting should be done, if possible, during the month of October.

Miss Ida D. Bennett has written for us the following cultural notes on this charming spring flower bulb:

"Few spring blooming bulbs hold so warm a place in the heart as these firstlings of the spring, coming, as they do, while the winter chill is still in the air and the snow still wreaths the shady nooks and corners. Naturalized on the lawn they are a joy to the eye starved by the winter's bare bleakness.

"They are one of the bulbs which should never be purchased by the dozen, but rather by the hundreds, and if possible, by the thousands. Their uses are many. They may be used to fill and carpet beds of larger bulbs, such as Tulips or Hyacinths, as ribbon edgings to other bulbs, or interspersed between hardy perennials or shrubbery, or, and this is really their opportunity,

scattered at random over the lawn, always in full view of the living-room windows that none of their glory need be lost. Late-blooming bulbs may be planted where one has to go to them to enjoy their beauty, but the little Crocus, which comes in the inclement weather of early spring, will be more intimately companionable if it greets our every glance from the window.

"No set lines or designs should be attempted in planting the Crocus on the lawn, rather as natural an effect as possible should be the aim. A way I find satisfactory is to take my basket of bulbs and throw them by handfuls on the sod, planting them where they fall. They will arrange themselves in groups of two's or three's, in larger colonies, and occasional single bulbs. Then, wherever the roots of a tree project along the ground I tuck away a line of bulbs beside it and find that this is a very congenial situation.

"In planting, lift the sod with the trowel, tuck away a few bulbs snugly beneath it, press back the sod, and that is all.

"Crocus on the lawn should, as far as possible, occupy a position where it will not be necessary to run the lawn mower until the leaves have matured, as the cutting of them injures the bulbs; when fully grown, they will, usually bend under the machine and escape injury.

"When used in beds they may be planted two inches deep and two inches apart. They make the most desirable of bulbs for forcing and should be planted in the low bulb pans or in window boxes, setting them quite close together. Or they may be used to fill in between other larger bulbs, such as Tulips or Hyacinths, but as the Crocus forces much more quickly—in about six or seven weeks—they should not be planted at the same time as the former, but a month later.

"The treatment is the same as for Hyacinths, but they should be forced slowly, left in a dark, cool cellar until about an inch of top shows and then given a cool position, away from afternoon sunshine if possible. It is fascinating to watch the development of the flowers, and if the large-named sorts are planted the pleasure will last for many days. Give water when necessary, keeping moist but not wet. Remove the boxes, when bloom is over, to the shelter of the side of a building on the north or east and allow to remain in the earth until the tops are dead and the bulbs are ripened, when they may be turned out and tucked away in crevices of the rock-work or any convenient place."

Crown Imperials

(*Fritillaria Imperialis*).

Very showy and stately early spring blooming plants of considerable value by reason of their bold habit and distinct appearance. Their large heads of drooping bell-shaped flowers of yellow or red are borne on a stout stem three to four feet high surmounted by a tuft of leaves. They grow well in any good garden soil, but should have a position which is not exposed to high winds. They look best when planted in clumps of three or more. The bulbs should be set at least six inches deep and a foot apart, and should be placed in a position where they can remain for a number of years as they dislike being disturbed. When established they flower abundantly and the stems should not be cut off but allowed to decay naturally. A slight covering during the winter will be found beneficial. The bulbs usually arrive from Europe about the middle of September and can be supplied from then on until December, but for best results should be planted, before the close of October.



CYCLAMEN.

Cyclamen.

As an ornamental winter flowering plant for the window garden or conservatory few plants equal and none excells the Cyclamen. The beautiful foliage is deep green, prettily marbled with pale green or silver. The finest flowers are obtained from young plants produced from seed and not from old bulbs. For this reason it is best to procure them in plant form.

These young plants are procurable from August to November and are usually supplied in three-inch pots. They should be repotted as soon as received into a four-inch pot, and moved into five-inch and finally into six-inch pots when the smaller pots become filled with roots. They do well in any good soil that is not too heavy. When wanted for winter flowering any flower stems that rise above the foliage before November should be pinched out, thus conserving the strength of the plant for winter blooming. They continue in bloom for three months or more if the old flowers are removed as soon as

faded. When through blooming the pots should be set out of doors in a shady place and allowed to remain until September, when the bulbs may be taken out and reset in fresh soil in the same pot. The bulbs should be merely slightly pressed into the surface, leaving them almost entirely above the soil.

As the returns from old bulbs are never as certain or as satisfactory as from young stock it is much better to get young plants each season.

Dahlias.

We have read a great many articles on the culture of this popular late summer and autumn blooming plant. Some of the notes would lead the amateur to believe that he would have to take a course in a school of horticulture before attempting to grow them. In our judgment Dahlias are very democratic in their requirements and readily adapt themselves to a great variety of soil and other conditions, and if anyone can grow good vegetables there is no reason why they should not grow good Dahlias under the same conditions. Of course, like most other plants, they respond to, and are improved by liberal culture, and if you want the best results they should be planted in a well drained position, where they will receive the full benefit of the sun during the greater part of the day and a free sweep of air. They are not particular as to soil, excepting that in the case of a stiff clay some loose material should be added, such as coarse sand, old mortar, or anything that will make the soil loose and friable. The soil must be deeply dug, not less than eighteen to twenty-four inches, and a liberal amount of suitable plant food incorporated. For this nothing is better than well rotted stable manure, and it is best to prepare the bed or border and apply the manure in the autumn. Fresh manure must not be used. When well rotted manure cannot be conveniently procured, pure bone meal, pulverized sheep manure, or any chemical fertilizer rich in ammonia and phosphoric acid will suit, and these may be applied in spring. The planting of dormant roots in the latitude of Philadelphia may be done any time between the end of April and the end of June. In planting roots make a hole four or five inches deep, in which place the tuber, covering with but one inch of soil and filling in the remainder as the top growth of the plant develops. The smallest, shriveled but sound tuber will start into growth and make a good plant if planted in this manner, and

in almost every case where Dahlia roots fail to start into growth, particularly the finer varieties, it can be traced directly to too deep covering, and no matter how early or how late you plant do not start your roots in the house, but set them out in a dormant condition. Green or growing plants must not be set out until all danger of frost is past, say May 10th, and from then on until the end of June. Some growers claim that the best results are obtained from the latest set out plants, but we believe that weather and other conditions have more to do with this than the actual time of planting. Do not crowd your plants but allow ample space for full development; three feet apart is not too much.

As all Dahlias in the garden should be staked it is just as well to put these in at the time of planting. The stakes should be not less than three feet high above the surface and sufficiently strong and firm enough in the ground to support the plants in case of a high wind, and the plants secured to the stakes with soft twine, beginning when they are a foot high. When the plants start into active growth the tops should be pinched out. This results in forming numerous lateral branches and a large crop of flowers and at the same time keeps the plants short and stocky, and less liable to be damaged by wind or heavy rain. To produce flowers freely the plants should be cultivated frequently, stirring up the soil around them, and must never suffer from lack of water. Early in July a mulch of strawy manure or any loose material may be applied, which will keep the soil cool and moist.

We are growing this season (1914) over fifty acres of Dahlias, comprising over five hundred varieties, and as a rule we are able to supply all but the latest introductions, in strong, field-grown roots, but towards the close of the planting season our supply of roots of some of the older sorts becomes exhausted, in which case green or growing plants are then sent. These plants are ready to send out after the middle of April and will give as good results as dormant roots, flowering just as freely, and many experienced planters prefer them. By the time the plants are cut by frost in the autumn they will have produced strong tubers, which can be carried over winter in the usual way.

In harvesting our crop of Dahlia roots in the autumn it is very interesting to note the great difference in the size of the roots produced by different varieties. Some kinds, frequently the shyest bloomers, produce enormous tubers, each one big

enough to fill a peach basket, while others, including some of the very finest and freest flowering sorts, make tubers not larger than a walnut. Our years of experience show that the size and weight of the tubers have no bearing whatever on the growth or flower production of the plant. Should you, at any time, order and receive a diminutive, dried up looking tuber, you can plant it with the assurance that the result will be entirely as satisfactory as from others ten times as big.

***Dioscorea Batatas* (Cinnamon Vine).**

A rapid growing, hardy climber, often running twenty-five to forty feet and taking its name from the peculiar fragrance of the delicate white flowers. The bright, glossy-green leaves are heart-shaped and quite ornamental. The long, tuberous roots may be planted at any time during the spring months, placing them in an upright position and deep enough so that the eye or sprout is covered with two inches of soil.

***Dielytra* or *Dicentra* (Bleeding Heart. Seal Flower. Lyre Flower).**

This beautiful, old-fashioned, hardy, herbaceous plant should find a place in every garden, growing freely in almost any kind of soil, but preferring a rich, light, rather moist one and thriving in any position, but it is especially valuable for a semi-shaded corner, producing its sprays of exquisite pink and white heart-shaped flowers in May.

They can readily be forced in a cool greenhouse, a clump or root being large enough for a six-inch pot. The roots can be supplied from October until April. We prefer to plant in the autumn, but have seen excellent results from those set out in early spring.

***Eranthis* (Winter Aconite).**

One of the earliest of hardy bulbs to bloom, flowering in February or March with pretty little golden-yellow flowers surrounded with a frill or whorl of shining green leaves, the whole plant not over six inches high.

It likes a rather moist soil and is seen to best advantage when naturalized under trees or on a shady bank, or in the grass, and is worthy of a place in the border, its bright yellow flowers being greatly appreciated when they peep out in early spring.

The bulbs are about the size of a large Pea, and in planting should not be covered more than an inch and three to six inches apart.

Eremurus.

Noble and rare, hardy, bulbous plants from the mountains of Turkestan and the temperate Himalayas with fine leaves and massive spikes, five to ten feet in height, of beautiful flowers which produce a splendid effect in the hardy border. They thrive best in a well drained, sheltered position, and do not object to a little shade during part of the day, and prefer a deep, sandy loam, to which has been added a liberal quantity of well-rotted cow manure.

The curious looking roots are frequently two feet or more in diameter, the fleshy roots radiating from the crown like the spokes of a wheel. These should be planted from October on, covering the crowns with about three inches of soil. A covering of four or five inches of leaves or litter will be beneficial and save the young shoots which start early from being damaged by late frosts. In a season when growth starts early it is well to protect the young growth on all nights when there is a danger of frost by turning an empty box or barrel over the plant.

Erythronium (*Dog's-tooth Violet*).

Beautiful, hardy, bulbous plants suited to moist, shady situations. The foliage is very ornamental, being prettily mottled or marbled. The lily-like flowers of various colors are borne on stems about a foot high and bloom in April.

The bulbs or roots are procurable from September to November and in planting should have two inches of soil over them. They succeed in any ordinary soil and are one of the hardy bulbs which do better planted in grass than in the border.

Eucharis Amazonica (*Amazon Lily*).

This beautiful bulbous plant should be included in the collection of everyone who has a hothouse. The plant has large, broad-bladed, deep-green leaves and it is quite ornamental at all times and sends up tall spikes, bearing several large, pure white, delightfully fragrant flowers, which are considered one of the choicest cut flowers. They should be potted in a compost of rich loam with the addition of peat or leaf mold and some coarse sand. They look best when grown in large pots containing several plants. Five bulbs are enough for an eight-inch pot or pan. Occasional applications of liquid cow manure during the flowering period are recommended. After flowering,

the plants should be rested by giving less water and keeping in a cooler temperature, but at no time must they be allowed to become quite dry. It is not unusual for them to give two or even three crops of flowers a year.

Freesias.

This is one of the most beautiful and useful bulbs from the Cape of Good Hope, possessing a peculiar grace of form, and its fragrance is most delightful, one pot containing a dozen bulbs being sufficient to perfume a whole house. As cut flowers they are extremely valuable. The unexpanded blooms opening in water fill the air with the most delicate perfume, and their endurance is really remarkable.

There are a number of varieties, of which our strain of Purity is probably the best for all purposes, although the New Hybrid varieties which come in a variety of colors are particularly interesting. While their culture is really very simple, many amateurs do not seem to succeed with them, and we hope that the following cultural hints will enable anyone to grow them successfully.

The bulbs may be potted at intervals from August till October or even later, which will insure a succession of flowers from January until June. Any light, rich soil will suit, preferably a compost of loam with a little leaf mold, sand and well-rotted cow manure or bone meal. A six-inch pot or pan will hold a dozen bulbs. These should be placed at equal distances in the pot or pan and covered with not less than an inch of soil. After planting give a good watering and place out of doors, or in a cold frame, in either case plunging the pots to the rims in ashes. The root and top growth start simultaneously, and when the tops are an inch high they should be taken into the place where they are to bloom. They can be flowered just as well in a sunny window as in a greenhouse. They like plenty of air, and failures frequently occur from lack of water, of which they should have an abundance while in growth. It must also be noted that Freesias dislike a very high temperature. From 55 to 65 degrees is warm enough. After flowering water should be gradually withheld, and when the foliage becomes yellow the pots should be set out in the sun to ripen up the bulbs. In a week or more the bulbs can be taken out and kept in a dry place for replanting the following autumn.

Fritillaria Meleagris

(*Snake's Head or Guinea Hen Flower. Chequered Lily*).

This variety is an elegant perfectly hardy species, growing from ten to eighteen inches high, bearing in late spring curious drooping, bell-shaped flowers, most of which are very oddly marked, many being chequered white and purple, cream and maroon, etc., etc. They grow naturally in damp meadows and do well in the shade, and as it grows freely in grass that is not mown early it is admirable for naturalizing, and every hardy bulb border should contain a few clumps or clusters. The bulbs are procurable from the end of September till November and should be planted about two inches deep and six inches apart, and will succeed in any ordinary garden soil.



FREESIAs.
(See opposite page.)

Funkia (Plantain Lily).

Elegant, hardy, herbaceous plants belonging to the Lily family; of the easiest culture and attractive subjects for the hardy or shrubby border, the margin of ponds; and the dwarf, variegated sorts are very effective for edging. Any kind of soil suits, although a light, sandy one is best, and they should have an ample supply of water while in growth.

The foliage of all the varieties is very attractive and attains largest size when grown in a semi-shady place, but they flower best in a sunny position. The roots may be set out at any time during the autumn or spring months, the dwarf varieties nine to twelve inches, the larger growing sorts eighteen inches apart.

Gladiolus (*Sword Lily*).

For best results they should have a sunny position. A good sandy loam suits them best, but they do equally as well in heavy soil, provided there is perfect drainage. Well-rotted stable manure is the very best fertilizer, and where convenient it should be spread over the land in the fall, and dug in the following spring. Sheep manure is an excellent substitute and can be applied in the spring. The best time to plant is about the first of May, putting in the smallest bulbs first, and reserving the larger bulbs for later planting. A succession of bloom may be had from July to October by making plantings two weeks apart up to the end of June. To make a good show they should be planted from three to four inches apart each way. The depth to plant is regulated by the size of the bulb, the large bulbs being covered about six inches deep, smaller ones from three to four inches.

After they have flowered and the foliage begins to turn yellow, which is usually along about the beginning of October, lift the bulbs, cutting off the stems, placing them in trays or shelves in an airy cellar or some such place, where the temperature will not fall below 45 degrees or over 60 degrees. In such a position they will keep perfectly until time for resetting the following season.

They are very effective in lines or beds or when planted among Roses, Pæonies, Shrubbery, etc.

In cutting Gladiolus for the house, it is best to cut the spikes as soon as the first one or two lower flowers are open. The remainder will open in the house. Remove the faded flowers, cut a little off the stem, and change the water every day; treated in this way, a spike will last a week or ten days.

Gloxinias.

In the window garden or conservatory the Gloxinia ought to be one of our common plants because of its great beauty, the profusion of its flowers and its summer blooming habit. But it is not common, by any means, and this fact is attributable almost entirely to the impression that prevails to a great extent that it is a very difficult plant to grow—quite beyond the ability of the amateur, in fact. Such is not the case, however, if one goes at it in the right way.

It is rather particular about the soil it grows in. Pot it in ordinary garden loam, and it will seldom do well. But give it

a soil of one part loam, one part turfy matter or leaf mold, and one part sharp sand, with a sprinkling of fine bone meal, and it will flourish luxuriantly.

The pots in which they are grown should be given the best of drainage, and great care should be taken in watering. Aim to keep the soil evenly moist, but never allow it to become like mud and remain so for any length of time if you want fine Gloxinias. In watering be very careful to not let any get on their leaves.

Helleborus (*Christmas Rose*).

Valuable and beautiful hardy plants, prized on account of their yielding at a season when flowers are scarce their beautiful, large blossoms. While they will succeed in any ordinary garden soil a rich, heavy loam suits them best. On poor, dry soil they are almost sure to be a failure. They should always have plenty of water, especially when making their growth, and should be planted in a sheltered, semi-shady position.

For very early flowering they should be planted in pots and placed in a cold frame, plunging the pots in coal ashes. Strong, imported flowering clumps or roots can be supplied from November till April.

Hemerocallis (*Day Lily*).

The Day Lilies are among the most popular hardy plants and belong to the Lily family. Their showy, rich colored flowers, with their wholesome fragrance make them valuable subjects in any garden. They adapt themselves and thrive luxuriantly under more varied conditions of climate, soil and exposure than any other hardy plant, and while a moist, partially shaded position is the ideal spot for them, they do almost equally as well in a dry place with full exposure to the sun, provided they do not suffer from lack of water during their growing and flowering period. While the individual flower is short-lived there is such a quick succession of bloom that every plant makes a good showing continuously throughout its flowering season, and even when out of bloom the bright green tufts of long green foliage add to the freshness of the border.

We offer in our various catalogues a number of the best varieties, covering all the colors from light yellow to the deepest orange, and blooming from early in May to the close of July. Some of the varieties only grow two feet high, while

others attain a height of five feet. The roots may be planted at any time during the autumn or early spring months, the dwarfier varieties being given about eighteen inches between each plant, the tallest sorts two feet or more.

Hyacinths.

The Hyacinth is so well known and esteemed that any description of its many good qualities is needless. In our catalogue will be found offers of the very best varieties covering all colors, including nearly every shade of red, rose, white, blue, purple, yellow, etc. For pot culture and for culture in glasses we strongly recommend that the Extra Selected First Size Bulbs be used, although the Select Second Size Bulbs will be found very satisfactory for pot culture, and the very best for high grade bedding where distinct shades of color are desired. For general outdoor planting the mixed varieties in separate colors are usually used. Of these we offer two grades, both of which will be found entirely satisfactory.

Outdoor Culture: The Hyacinth will grow well in any good garden soil, but a light, rich soil suits it best. The beds should be well drained, for though the plants love moisture they will not thrive if covered with water through the winter. For a rich effect the bulbs should be planted six inches apart, but a very satisfactory effect may be made by planting them nine inches or even more apart. Set the bulbs so that they will be covered with four inches of soil over them if the ground is heavy, and six inches if it is of a light, sandy nature. Planting may be done any time from October to December. When a crust of frost has formed over the surface of the beds give them a covering of a few inches of straw, leaves, litter, or manure to protect them from hard freezing. This covering should be removed when danger of hard frost is past in the spring. After blooming, the bulbs intended to flower again should be left undisturbed until the leaves wither or die. The bulbs should then be lifted, dried and stored in some dark, cool place until time for replanting the following autumn. It is the usual custom to take up the bulbs each year, but we have seen very fine beds that were not disturbed for several years, the beds during the summer being planted with some shallow rooting annual sown over the surface, such as *Petunia*, *Verbena*, *Portulaca*, etc.

Pot Culture: Plantings may be made at any time from September to December. A light, rich soil, made of two parts

loam, one part thoroughly rotted cow manure, and one part leaf mold and sand is ideal, or prepared fibre will answer nicely, being clean and odorless and particularly adapted for those who live in cities where the right kind of soil is not readily obtainable. Pot fairly firm and let the tip of the bulb just peep out of the soil. After potting give a good watering, and set away in a cool, airy cellar, outhouse or cold frame and cover with coal ashes or litter until the bulbs have thoroughly rooted. During this period be careful that they do not become dry. They should remain in the dark for six weeks or more or until a top growth of three or four inches has developed, when they may be brought into the house and placed in a partially shaded position for a few days, after which they may be placed wherever they are wanted to bloom. A temperature of about 60 degrees is warm enough if good results are wanted. Seventy degrees is too warm and produces weak foliage and unsubstantial flowers. One bulb is enough for a five-inch pot, or three bulbs may be placed in a six or seven-inch pot or pan. French Roman Hyacinths are the earliest to bloom and can be had in flower from Christmas onwards by planting six bulbs in a six-inch pot from August on, giving them the same treatment as described above.

Culture in Glasses: When it is desired to grow Hyacinths in water a special selection of sorts adapted for this purpose should be procured. They should be placed so that the base of the bulb merely touches the water. The glasses should then be set in a cool, dark, airy closet, or in the cellar until filled with roots, when they may be brought into the light. A piece of charcoal about an inch in diameter placed in each glass will keep the water sweet. Give as much fresh air as possible and



SINGLE HYACINTH.

keep at a temperature of not over 60 degrees until the spikes are developed. To put them at once into a room with a temperature of 70 degrees or over would cause them to flower prematurely.

Culture in Prepared Fibre: Under the heading of pot culture we recommend the use of this material instead of soil for those who live in cities and who are unable to procure soil easily. This prepared fibre is light, clean and odorless, and can be used either in place of soil in pots in the ordinary way, or the bulbs can be planted in it in jardinières or receptacles without drainage. In using this material it should be thoroughly moistened but not so wet so that water may be squeezed out of it by the hand. The bulbs should then be planted in the same way as when put in pots, but should not be potted too firmly but loose enough to permit the fleshy roots of the bulb to penetrate it easily. Water should be applied as needed, and it is well an hour or two after watering to turn the jardinière on its side and let any surplus water drain off.

In addition to the foregoing we would also ask our patrons to read the cultural notes below contributed by Miss Ida D. Bennett:

"Probably the most popular of all forcing bulbs. Require practically the same treatment at the start as the Tulip, but may be forced much more rapidly—from 6 to 8 weeks usually being sufficient to bring them into bloom. In pots or window boxes they are equally satisfactory. One bulb in a five inch pot, four in an eight-inch pot, or a double row in a six-inch wide window box, setting the top of the bulbs an inch below the surface of the soil. Provide in either case sufficient drainage and place in a cool, dark place until top growth begins. When planted in pots it will be well before bringing them up to the light to turn the ball of earth out of the pot to be assured that it is well covered with roots; if the root growth is weak or insufficient, the pots should be kept back until it is satisfactory.

"In glass culture, the bulbs should be placed a little above the top of the water, to which has been added a piece or two of charcoal, and a little sand or fine gravel in the bottom helps to keep the water clear as it holds any sediment which occurs. A dark, cool closet will answer admirably for this mode of culture, and the bulbs should remain in the dark until the roots touch the bottom of the glass. Single Hyacinths give the most satisfaction for forcing, especially in glasses.

"As the Hyacinth is one of our most expensive spring-bloom-

ing bulbs, it is of interest to know that bulbs which have been forced need not be discarded as worthless, but if properly handled will give quite satisfactory results the following spring in the open ground.

"The treatment is this: After the period of bloom is over, the pots, boxes, or other receptacles should be placed outside in the shade of a building where they will be exposed to the weather under natural conditions and allowed to remain until planting time the following fall, when they may be turned out of the earth and replanted wherever desired.

"For outdoor culture, the Hyacinth should, if possible, be planted where it is to remain, setting the bulbs four inches deep and seven inches apart each way.

"The Dutch Roman or Miniature Hyacinth, though small in size of bulbs form large graceful spikes and are charming for forcing. The named sorts should be selected and five or six bulbs may be planted in an eight-inch bulb pan, or they may be forced in window boxes. A most delightful effect is produced by grouping them in separate colors in the boxes, and leaving three or more open spaces in which, at the time of bloom, small plants of Maiden Hair Fern, or other Ferns of fine growth may be introduced. A few planted in a Fern Dish with space for a fern in the centre makes a delightful centerpiece."

Hyacinthus or Galtonia (*Spire Lily. White Cape Hyacinth*).

A noble, summer-flowering bulb, growing three to five feet high, the spikes gracefully surmounted with from twenty to thirty pure white, drooping, bell-shaped flowers, and of great decorative value in the garden. They may be planted in clumps or lines, and look especially attractive when grown in conjunction with some of the high-colored *Gladiolus*. It is quite hardy and may be planted out, but should have a covering of several inches of leaves or litter. As a rule the bulbs are lifted in the autumn, after the first killing frost, and stored in a dry, frost-free place until the following spring. Plant the bulbs six inches deep, and from twelve to eighteen inches or more apart. Dormant bulbs may be procured at any time from October until June.

***Incarvillea* (*Hardy Gloxinia*).**

The variety *Delavayi* is one of the choicest tuberous-rooted plants introduced in recent years. Its large *Gloxinia*-like flowers are of a deep carmine rose with a yellow throat which last

in perfection for a long time, and are produced in clusters on stems eighteen to twenty-four inches high. The foliage is also quite ornamental.

It should be planted in late autumn or early spring in a sheltered, well drained border, in light, rich soil, or in a cold frame. A shovelful of ashes over the crown should be given if planted in an exposed situation. The roots can be supplied from the end of October until May.

Iris (*Flags. Fleur de Luce. Rainbow Flower*).

An extensive and most beautiful genus of which we offer a very fine selection of the most important types. The bulbous sorts have bulbs just like Tulips and should be planted and cared for in the same way, and while all of the varieties have claims on the attention of the amateur, the Spanish sorts are particularly desirable, both for garden decoration and for cutting, and it is doubtful if any other bulbous plants give more generous returns. They have appropriately been called the Orchids of the hardy flower garden, some of the choicer Orchids being their only rivals, and even they can hardly be said to exceed them in richness, variety and beauty. When cut they last in good condition for a week or more.

They are of the simplest culture, succeeding in almost any soil or position. The bulbs should be planted two to three inches deep and four to six inches apart, and for best effect should be planted in beds or groups of twenty-five to a hundred or more bulbs, the larger the number the finer the effect. They grow from eighteen to twenty-four inches high and bloom from the end of May on through June, and the bulbs may either be lifted or allowed to remain, giving good results for a number of years. To those who have never grown this Iris it might be well to say that the foliage in early spring looks thin and weak and the plant apparently not capable of producing a flower, but toward the middle of May the plant takes on a heavier, more robust appearance and the flowers are produced on good, stout, long stems of just the right length for cutting.

The English Iris are also well worth growing. They are somewhat like the Spanish but with heavier foliage and larger flowers and come into bloom two weeks later. They prefer a heavier and moister soil. Among other bulbous sorts which we offer may be noted the charming *Reticulata*, which produces its purple and gold flowers in March, and the *Peacock*

Iris. All of the above can be brought into flower two or three weeks earlier if grown in a cold frame, but they are seen to best advantage in the garden, and we would not advise forcing them. The bulbs of the foregoing sorts usually arrive from our growers in Europe about the end of September and can be supplied from then on until December.

The Rhizomatous section which includes the German Iris and its various hybrids are among the most desirable and easy growing of our spring flowering hardy plants, producing in May their showy flowers of exquisite coloring, combining the richest and most delicate tints. For best results this class should have a well drained, sunny position, in almost any kind of soil, barely covering the roots, and fresh manure must be avoided in preparing the bed or border.



SPANISH IRIS.

The flowering season of the various Iris, beginning in March, is closed by the superb Japanese sorts, *I. Kampferi*, which bloom in June and July and are considered by many the finest of all, and they are usually considered sub-aquatic plants, and seem at home on the edge of a pond or stream, but the best and finest flowers can be produced in any position in the garden, where they can have good, rich soil and no lack of moisture when they are forming their buds and developing their flowers. When used as cut flowers they should be cut when in bud, permitting the blooms to expand after being placed in water.

Ismene (Peruvian Daffodil).

A grand summer-flowering bulb, producing with great freedom large *Amaryllis*-like, pure white, fragrant blossoms. Keep the bulbs in a dry, warm place, and plant out in June. Bulbs can be taken up in October, and, after a few weeks' rest, potted and flowered in the house in winter, or kept over for planting out another season.

***Ixias* (African Corn Lily).**

A lovely class of bulbs from the Cape of Good Hope, producing spikes of brilliant flowers. Though not considered reliably hardy north of Washington, they will be found to succeed admirably in a warm border which is well drained. The soil should be somewhat light in character and the bulbs must be planted deeply, not less than four inches and three inches apart, and covered with some material through the winter that will throw off heavy rains. When grown in pots they should be given the same treatment as recommended for *Freesias*.

The following cultural notes, written for us by Miss Ida D. Bennett, indicates that *Ixias* are much hardier than generally supposed:

"These charming flowers, with their dainty forms and exquisite coloring, are seldom seen owing to a mistaken idea that they are difficult to grow—not hardy in the open ground. Their culture, however, is quite simple once their requirements are known, and I have wintered them very successfully in Southern Michigan, and any plant which will endure our changeable, often arctic weather, should offer little cause for anxiety in a more congenial location.

"The culture is very simple but also very particular on one or two points; moisture during winter is fatal, therefore, the bulbs should be planted in well-drained loamy soil, containing a good supply of clean, sharp sand. They should be planted in solid beds of, say a hundred bulbs, setting them three inches apart and three or more deep. They can be planted any time in the fall, but before the ground freezes they must be covered several inches deep with dry leaves, and the leaves protected with a box or frame, which will successfully resist and shed rain and melting snow. A large, shallow box, six or eight inches deep will answer admirably. Protected in this way they should endure our most severe winters. In the spring the covering may be removed when growth starts, but a part should be retained at a convenient point to be replaced in case of a cold night. Given these precautions, the culture of *Ixias* is successful and most interesting."

***Leucojum* (Spring Snowflake).**

Pretty, hardy bulbous plants allied to the Snowdrop, but of much stronger and bolder habit, growing in rich soil from eigh-

teen inches to two feet high and producing freely in early spring beautiful, large white flowers, each petal tipped with a distinct green spot, and highly prized as a cut flower.

The bulbs, which are obtainable any time between the middle of September and the end of November, should be planted as early in the autumn as possible, about two inches deep, and four to six inches apart. Once planted they take care of themselves, and should have a place in all hardy bulb or herbaceous borders, or on the rockery, and are especially attractive, naturalized among grass that is not cut until after the leaves have turned yellow. They look best when set out in clumps or clusters of a dozen or more bulbs.



LILIUMS.

Lilium (*Lilies*).

Written for us by MISS IDA D. BENNETT.

Hardy Lilies are one of the most important features of the flower garden. The original cost is often considerable, but returns are very handsome indeed. One plants, not for the one season, but for the many coming seasons; indeed, it is not unusual for clumps of the more hardy lilies to outlast the original planter, his children and grandchildren. I have in my own garden a clump of Tiger Lilies which were planted in the same spot in which they still bloom thirty-five years ago, and *Candidum* Lilies and *Canadense* Lilies have been blooming in the same beds at least half as long.

The soil for Lilies should be a warm, friable loam, but a clean healthy soil, as Lilies of the finer sorts are very susceptible to dampness, sourness, or the presence of worms in the soil. In preparing the beds for Lilies it is well to test them with litmus paper, and if any sourness exists it should be well limed. The admixture of sharp sand, bone meal, and powdered charcoal will put it in good condition.

The soil for Lilies should be dug deeply, as it will not be disturbed for several years after planting if the planting is successful; that is, if the Lilies are to be planted in solid beds. This, however, is not the best culture for Lilies, as they will do much better if planted in groups in the shrubbery or in beds of hardy perennials. The manner of growth of the Lily is peculiar. It sets its bulb deep in the ground, and sending up a flower stem throws out lateral roots from this near the surface of the soil to brace its stalk more firmly and help it withstand the force of the wind. Now, if the Lilies are planted in beds by themselves or in open ground without any screen from the sun, the heat and light dry the tender rootlets, so that they are injured if not killed outright; so if they are to be planted by themselves they should be given a generous mulch of lawn clippings during the summer, and this should be drawn up well about the stem. Planting among perennials and shrubbery is much to be preferred, however, especially a shrubbery border, having low plants in front and open spaces, where clumps of Lilies may be so placed as to be shaded on the west and south from the sun. Planted in this way the Lilies do admirably.

The time to plant the greater number of hardy lilies is in the fall, as soon as they are mature. The Japanese Lilies do not reach this country often well into November, so that one should always have their orders in early so that they may be filled as soon as the shipments arrive, and where there is danger of the ground freezing it should be protected with dry leaves, corn fodder or other litter.

The Auratum Lilies are of all Lilies the most desirable and beautiful and are quite dependable. They do not last the extreme number of years as Tiger and some other Lilies, five years being about as much as one can depend on.

Clean, sharp sand is practically a specific for most of the ills to which Lilies are exposed, and its presence about the bulbs protects them from many ills. A pad of sphagnum moss directly under the bulbs insures good drainage and seems to be especially congenial to the bulb. Charcoal and sulphur sprinkled about it in planting is also of use in warding off attacks of worms, blue mold, and like afflictions of Lily life.

Lilies, once planted, should not be disturbed as long as they are doing well, but if they fail to do well it is necessary to lift the bulb, which will perhaps be found to have been made a nesting place for ants, or for the small white wire worms. In either case the bulbs should be thoroughly cleansed, removing

all decayed or broken parts, and the bulbs replanted in fresh soil at a distance from its former home.

Plant such large growing varieties as Auratums and the like at least five inches deep and a foot apart.

Plant all tall-growing sorts in the rear or centre of the beds; lower-growing, drooping or sprawley sorts like the various Speciosums in the foreground.

Unlike most Lilies which require to be planted in the fall the Candidum Lilies finish their growth early and are dormant in August and should be planted then before root and top growth begins. These Lilies differ in another respect in that they should be planted rather near the surface of the ground.

All Lilies are benefited by shade about the roots, but few if any do well with shade about their heads, so should always be planted where the blooms can top the immediate foliage, on the east at least.

Auratum and Speciosum Lilies, while listed among those Lilies which should be planted in the fall, may also be planted in early spring, as soon as the ground is in condition. The Speciosums are such generous bloomers, being many branched and well set with flowers, that they should form a feature of every hardy Lily bed. They are especially good where the beds are bordered with sod, or has some low-growing greenery to serve as a setting for the jewel-like flowers.

Lily of the Valley (*Convallaria Majalis*).

Few flowers combine the beauty and fragrance and are as useful for cut flowers as Lily of the Valley. Its spikes of pure white bells are everywhere admired.

For indoor culture the imported pips or crowns should be used. These are grown in Germany and are usually received about the middle of November. The simplest plan is to place a bundle of twenty-five pips in a seven or eight-inch pot or pan, covering the roots but not the pips with sand, prepared fibre, moss or light soil. They can then be placed out of doors, and if subjected to some frost it will materially aid in their quick flowering. The pots may be brought into the house as wanted, and if frozen should be thawed out gradually and then placed in a semi-dark position in a temperature of 70 degrees or more until the spikes are three or four inches high, when they may gradually be brought into the light to perfect their flowers. All of this can be accomplished within a month from the time they are potted.

Lily of the Valley is charming when naturalized, but in the garden it is best cultivated in beds which may be of any convenient size. It is not particular as to soil but should have a good rich one if possible, though any lack of fertility can be made up by top dressing with well decayed manure.

Clumps are best for outdoor planting. These are dug from a solid bed and contain a large number of pips or crowns in various stages of development, insuring flowers year after year. For an immediate effect the clumps should be set out with a foot of space between each and covered with not over an inch of soil. These clumps are imported and can usually be supplied from the end of October until April. To get the best results the first season they should be planted in the autumn.

The following notes, written for us by Miss Ida D. Bennett, gives her experience with this favorite flower:

"Lily of the Valley may be successfully forced inside if the imported pips are used. It seldom pays to bother with the home-grown pips. About 25 pips should be planted in a seven or eight inch bulb pan, setting them with the tips slightly above the surface of the soil. The pans should be set on a bed of ashes outside and allowed several days and nights of hard freezing, as this will greatly hasten their blooming. They should then be placed in the cellar until growth starts. Usually they bloom in about four weeks in the house. They should be given a north or an east window in a not too warm location, and kept moist but not wet.

"In planting outside a cool, moist, shady position is desirable, usually one on the north side of the house being chosen. It is better to purchase clumps rather than pips for outdoor culture, setting them twelve inches apart each way.

"Good, rich soil is desirable. The bed may be left undisturbed until it has formed a solid mass, when it will be necessary to relieve it. This is conveniently done by removing a strip of plants twelve inches wide across the width of the bed, taking every alternate foot and filling in the emptied space with good soil. The remaining plants will quickly spread into this fresh soil, and when they have become well established and are blooming satisfactorily the strips of plants which were left may be removed, thus renewing the entire bed without having it out of commission for any appreciable time. The plants removed may be used for starting new beds."

Milla (*Mexican Star of Bethlehem*).

A most desirable summer-flowering bulbs for the garden. The waxy flowers are nearly two and a half inches in diameter, pure white, and usually borne in pairs; the petals are of great substance and will keep for days when cut. Dormant bulbs can usually be had from January till June and should be planted out as soon as the ground is warm, in a sunny position, and prefer a light soil. They look best in clusters of half a dozen or more, planting the bulbs two inches deep by three or four inches apart.

Montbretias.

These are one of the brightest of our summer-flowering bulbs and deserve to be planted extensively. The growth and habit of the plant as well as the flowers somewhat resemble a small *Gladiolus*. The colors are exceedingly brilliant, mostly in rich shades of yellow orange, and red, and are splendid for cutting. The bulbs may be had at any time from January to June and should be planted out during April or May in a sunny position in clumps of a dozen or more, or in lines, setting them two inches deep and three to four inches apart. They are hardy if given the protection of a good covering of leaves or litter, and it is advisable to lift and reset them every second or third year.

Muscari (*Grape Hyacinth. Feathered Hyacinth. Pearls of Spain*).

Pretty little bulbous plants of great beauty when grown in clumps or masses in the hardy bulb or perennial border, on the rockery or among grass.

Muscari Botryoides is popularly known as the Blue Grape Hyacinth, while the white variety is known as the White Grape Hyacinth or Pearls of Spain. *Muscari Heavenly Blue* is a comparatively new sort with much larger and finer spikes of flowers than the ordinary blue variety. The clustered spikes of flowers of all of the foregoing resemble a miniature inverted bunch of grapes. A dozen bulbs in a six-inch pot or pan form an attractive feature in the window garden, blooming late in March or early in April, and should be handled in the same manner as recommended for *Crocus*.

Muscari Plumosus, the Feathered Hyacinth is an odd and interesting variety, growing a foot or more high, and producing

spikes of purplish-claret flowers cut up into wavy filaments in such a way as to resemble purple feathers.

Bulbs of all the sorts can be had from September to December and may be planted at any time during the autumn. They will grow almost anywhere, in any kind of soil, and once planted will take care of themselves. The bulbs should be set about two inches deep and three to four inches apart.

Miss Ida D. Bennett says of them:

"The well-known Grape Hyacinth, in blue and in white is delightful and redolent of the spring itself when forced indoors. A dozen bulbs can be planted in a six-inch pan. Out of doors, the Grape Hyacinth is practically indestructible, and is excellent for naturalizing in the grass of the lawn, where it will take care of itself. It is exceedingly pretty along the banks of streams and will endure more shade than other forms of Hyacinths. On my grounds a thrifty clump has been growing undisturbed in the sod of the side lawn for a period of nine years, with no diminution of bloom or vigor."

Narcissus (*Daffodils, Jonquils, etc.*).

There are no hardy, bulbous plants which have more points of merit than the Narcissus or Daffodils. With the exception of the Polyanthus type they are all perfectly hardy, growing and doing well in almost any and every position, all conditions seem to suit them, and every hardy bulb or perennial border should have a number of clumps interspersed through them, while vacant corners in the garden, amongst the grass, under trees, etc., could not be used to better advantage than by filling with some of the lovely varieties of Narcissus now offered so cheaply, and while the cultivation of the Narcissus out of doors is without difficulty it is worth while to try and give them as near ideal conditions as possible, and secure flowers of the largest size and finest quality.

They have a preference for a free, loamy soil, one that has been manured for a previous crop, and as the roots dislike coming into contact with animal manure, many experienced growers use bone meal supplied at the rate of four ounces to each square yard, and in light soils a liberal dressing of wood ashes or a sprinkling of sulphate of potash, about one ounce to each square yard applied annually in the autumn is recommended. The earlier they are planted in the autumn the better chance there is of their doing well, and they may be allowed

to remain where planted as long as they do well. If they show evidence of becoming overcrowded they should be lifted during the summer and replanted after the space has been well enriched with bone meal or other high grade commercial fertilizer.

In planting Daffodils in grass where the soil is often poor make a fair sized hole with a trowel, filling with good soil before planting the bulbs, and when planted in grass a natural arrangement of planting should be followed. Broad, irregular groups will look much better than a few bulbs together at uniform distances. The leaves of the Daffodils in grass must not be cut before they become yellow.

They are equally suitable for pot culture for winter flowering. Three or four bulbs can be put into a five or six-inch pan or pot, and with the same treatment as given to Hyacinths the dull winter and early spring months can be made bright with their exquisite gold and silver blossoms, but it is out of doors that Narcissus do best, and once planted require little further attention, the clumps multiplying and giving larger and finer results each year, and from an original planting of a few hundred bulbs in two or three years may be cut thousands of flowers without missing them. In cutting Daffodils for house decoration cut the flowers when the buds are opening and let the stalks be long as the flowers group better with long stalks.

Narcissus vary greatly in form and size, and we fear that many people do not get what they want for the reason that they do not order correctly. We have seen cases where a pot of Emperor Narcissus in a florist's window have been called Jonquils, and Daffodils, and Narcissus, all within three minutes. In the bulb trade the term Narcissus properly covers the entire genus. Jonquils are Narcissus Jonquilla and Odorus, a comparatively small flowering type, while the term Daffodil is usually given to the double flowering sorts only. In our own catalogue we divide Narcissus into seven groups as follows:

Giant Trumpet Sorts. This type is considered the showiest of the genus and also the most useful, all having very large trumpets and broad petals or perianth.

Medium Trumpets, Peerless, Chalice-cup or Star Narcissus. In this class the trumpet is usually half the length of the petals or perianth and comprise some of the most beautiful and graceful forms.

Pheasant's Eye or Poet's Narcissus. The old-fashioned favorites with white flowers and small cups margined with red.



LARGE TRUMPET NARCISSUS, POLYANTHUS NARCISSUS AND JONQUILS.

Double Flowering Sorts. The term Daffodil is usually applied to this type, the double yellow Van Zion in particular.

Jonquils. These are *Narcissus Jonquilla* and *Olorus*, much prized for their golden, very fragrant, if small, blossoms.

Poetaz. A comparatively new type, the result of a cross between the Poet's and Polyanthus sorts. They are quite hardy and produce their flowers in clusters and are rapidly becoming popular.

Polyanthus or Nosegay Daffodils. This type includes the Paper White *Narcissus* and Chinese Sacred Lily which are so popular for growing indoors in pots, and in bowls of water and pebbles. Unlike the other varieties they are not hardy except in favored localities or where they can be protected, and are not recommended for outdoor planting, but feel safe in saying that the Paper White Polyanthus *Narcissus* is the easiest of all bulbs to grow indoors.

The following notes, written for us by Miss Ida D. Bennett, gives further cultural notes on these important bulbs:

"*Narcissus* in the open ground call for the least care and special treatment of all spring blooming bulbs. The most satisfactory manner of growing them is in long ribbon lines as borders to beds of shrubbery or perennials, or naturalized in clumps in the grass and shrubbery. As the *Narcissus* should not often be disturbed it requires more space in which to develop than most spring blooming bulbs and should be set four inches deep and twelve inches apart in the rows or clumps. The *Narcissus* increases its bulbs by forming new bulbs in a circle about the old bulbs and another circle outside of this; for this it needs abundant room for the development of the large number of bulbs which eventually result.

"As a rule, it will not be necessary to take up and reset the bulbs until they show signs of the need of more room by shyness of bloom, when they may be lifted any time after the ripening of the foliage and before growth begins at the roots, usually in August, and the newly reset bulbs will begin at once the production of blossoms and new bulbs.

"No protection whatever is necessary for the *Narcissus* in winter but a mulch of lawn clippings, or the protection of taller plants is beneficial to the bulbs after the dying of the foliage in mid-summer.

"As a forcing bulb all the several varieties of *Narcissi* are admirable. Nor is it absolutely necessary to sequester them in a dark cellar as is the rule with Hyacinths, Tulips and the

like. Bulbs potted and placed among the plants in the window garden, or even thrust down into the soil of any large potted plant will come forward into bloom at about the same time as those consigned to the cellar. I have had good results from bulbs thrust down against the side of large pots containing palms or other ornamental plants. The large Trumpet varieties are the more satisfactory for pot culture. All are hardy in the open ground except the Paper White and other Polyanthus sorts."

Ornithogalum (*Arabian Star of Bethlehem*).

Ornithogalum Arabicum or Arabian Star of Bethlehem is a very showy and distinct species, bearing racemes of white flowers with a black centre, having a sweet, aromatic odor, borne on spikes eighteen to twenty-four inches high. They are excellent for forcing, being largely used by commercial florists for this purpose. Nothing is easier to grow and should be handled in the same way as described for the Dutch Hyacinths. The bulbs may be placed singly in four-inch pots, but we think they are more effective when five bulbs are grown together in a six-inch pot or pan.

They can also be planted out of doors in a well drained, sheltered border, but their main value is for indoor culture. The bulbs are about the same size as a Dutch Hyacinth and can be supplied from the end of August until December.

Oxalis.

Miss Ida D. Bennett contributes the following cultural notes regarding the Bermuda Buttercup *Oxalis*:

"Is one of the most satisfactory winter blooming bulbs, as after it is once potted it requires little more attention than an occasional watering. The bulbs, which are ridiculously small for the effect produced should be planted an inch or two deep, singly in a four-inch pot, or three bulbs may be planted in an eight-inch hanging basket. As this *Oxalis* is a trailer it should always be grown in a basket or on a bracket. It gives a wealth of fragrant yellow bloom from a few weeks after planting throughout the winter, and unlike most winter blooming bulbs does not need a period of seclusion to perfect its floral mechanism, but may be placed at once in the window in which it is to bloom.

When through blooming in the spring it may be turned out of the pot and it will be found that a number of new bulbs

have formed, but strangely enough, these new bulbs will all be found at the bottom of the pot, quite out of the neighborhood of the parent bulb."

The other varieties of *Oxalis* which we offer should be handled in practically the same manner as above described. The bulbs can be supplied from August until November, but should be planted as early as possible.

Paeonies.

The old-fashioned *Paeony officinalis* of our grandmother's garden, while still popular because of their early flowering, have been eclipsed by the wonderfully improved sorts introduced in recent years. They are the "Queen of Spring Flowers," and are well adapted for massing in beds and particularly valuable for planting in groups throughout the perennial or shrubbery border, where their brilliant hues add attraction to all around. Their requirements are simple; a good, rich, deep soil, and an open, sunny position, which, however, is not absolutely necessary, as they thrive almost equally as well in a partly shaded position and a liberal supply of water during their growing season being sufficient to give an abundance and wealth of flowers, which rival the finest *Roses* in color and fragrance, and produce during their flowering season a gorgeous effect not equalled by any other flower. They are perfectly hardy, requiring no protection whatever even in the most severe climate, and once planted increase in beauty each year.

An important point to observe in the planting of herbaceous *Paeonies* is not to plant too deep. The roots should be placed so that the crowns are covered with two inches of soil. It is also equally important that the plants do not suffer for lack of water when the flower buds are forming. When the buds blast when they are about the size of a pea, it is usually caused by a lack of moisture at this stage of development. The best



ORNITHOGALUM.
(See opposite page.)

time to plant is in early autumn, although they may be planted in spring with equally good results. The roots are usually dug in September and can be supplied from then on until May.

Puschkinia (*Striped Squill*).

A beautiful, hardy spring-flowering bulb which looks like a gigantic *Scilla Sibirica*. The flowers, however, are blue-white with a darker stripe through the centre of each petal. Begins blooming in March and continues in good condition for weeks. They will grow freely in any ordinary garden soil that is not too clayey. Five or six bulbs in a five-inch pot make an attractive subject, requiring the same treatment as recommended for *Crocus*.

They are more particularly adapted for outdoor culture, and few bulbs look better than clusters of *Puschkinia* on the rockery or in the hardy bulb or perennial border. Plant two inches deep and three to four inches apart. The dormant bulbs are in stock from mid-September to November.

Ranunculus.

These beautiful, dwarf-flowering bulbs were at one time a favorite florist flower in the markets of Europe, and are again coming into favor. In this country they are not reliably hardy north of the Potomac except in warm, sheltered borders, but do beautifully in a cold frame, and are a favorite flower in the Pacific Coast States. Indoors they are forced in the same way as recommended for *Anemones*.

The curious claw-like bulbs can be procured any time during the autumn months, and can be kept dry without injury until spring, at which time they may be set out in almost any part of the country. They will do well in any ordinary garden soil, and in planting place the claws downwards and cover with two inches of soil.

Scillas (*Squill. Spanish Bluebell. Wood Hyacinth*).

The Scillas or Squills are beautiful spring-flowering bulbs, perfectly hardy in all parts of the country. The Siberian Squill, *Scilla Sibirica*, in one of the prettiest of the very early flowering bulbs, of dwarf habit, with sprays of rich blue flowers, and charming when grown by itself or in conjunction with *Snowdrops*, *Chionodoxas* or *Crocus*. A dozen bulbs in a five-inch pot make a pretty effect when grown indoors, handled in

exactly in the same way as *Crocus*.

Scilla Campanulata, the Spanish Bluebell or Wood Hyacinth, is suitable for planting in the hardy bulb or perennial border, but particularly adapted for planting by the side of woodland walks, in the grass, on the margin of shrubbery, or in the wild garden, and is one of the few things that will thrive under pine trees. They come in blue, rose and white.

Bulbs of *Scillas* are procurable all through the autumn months, and are of the simplest culture, doing well in any ordinary garden soil that is not too heavy, and once planted require no further care except perhaps for a yearly light top dressing of well-rotted manure. *Scilla Sibirica* should be planted two inches deep and three inches apart; *Campanulata*, three inches deep and six inches apart.

Snowdrops (*Galanthus*).

Universal favorites and the first flower to herald the approach of spring. The Snowdrop is not particular as to soil, but seems to do best on one of a rather light, sandy nature. Planted in conjunction with the Blue Chionodoxas and *Scillas* a matchless effect can be produced. As the bulbs are small they should be planted liberally in order to get immediate results, and they should not be disturbed often if a fine display is desired.

The bulbs can be procured any time during the autumn months and should be planted about two inches deep, and two to three inches apart. They can be used along the front of the hardy bulb or perennial border, but seem to be more at home planted in the grass, which should not be cut until the leaves



SCILLA CAMPANULATA.

become yellow. When planted in turf they should not be placed in formal lines but in irregular masses. In growing Snowdrops in pots they will not stand forcing, doing best in a low temperature. A dozen bulbs will fill a five-inch pot.

Sparaxis (*Harlequin Flower*).

A very ornamental genus of brilliant-flowering, bulbous plants from the Cape of Good Hope, resembling the *Ixia* and requiring the same general treatment. Like the *Ixia* they can be planted in the open border, preferably in a bed with a warm, southerly exposure and where the drainage is perfect. The bulbs may be planted at any time from October to December at a depth of from three to four inches and about three inches apart.

They are lovely when grown in pots. Five to six bulbs are enough for a five-inch pot. Use rich, but light soil. Plunge the pots in ashes in a cold frame until the leaves appear, when they may be brought inside as wanted, keeping them close to the light and giving plenty of water.

Spiraea or Astilbe.

As a pot plant for the cool conservatory or window garden, this is one of the most satisfactory and easiest to grow. The clumps or roots should be put into pots or pans just large enough to hold them as soon as received in November, given a thorough watering and set outside in a sheltered position or cold frame and covered with ashes or litter. For Easter flowering bring them into the house from eight to ten weeks in advance of that date. For best results keep them cool and give plenty of water.

They are also very largely used in the hardy border, and on the margins of lakes and ponds, blooming outdoors in June, and prefer a partially shaded position.

Sternbergia (*Autumn Daffodil*).

Pretty, dwarf, hardy autumn-flowering bulbs that deserve to be better known, bearing large flowers like a glorified yellow Crocus. These appear in the autumn without leaves, the foliage being produced in spring. To do well they should have a rather dry, sunny position and a moderately light, well-drained soil with some lime incorporated.

The bulbs can be procured from early September until November and should be planted as early as possible, covering

them with two inches of soil and three or four inches apart. They look best when set out in clumps or clusters of a dozen or more.

Tigridias (*Tiger Flower*).

These gorgeous summer-flowering bulbs look well associated with Gladioli, Lilies and kindred stock. They grow about one and a half feet high and flower freely throughout the summer. They require the same treatment as recommended for Gladioli, and should be lifted in autumn and dried off in the same way. The bulbs can be supplied at any time between January and June.

Trillium (*Wood Lily. Wake Robin. Trinity Flower*).

Excellent, perfectly hardy plants for shady positions in the hardy border, the wild garden, under trees or in a sub-aquatic position, flowering in early spring. They grow naturally in moist woods and do best in a moist soil containing plenty of leaf mold or peat.

The bulbs or tubers can be supplied any time during the autumn or early spring, and should be planted with the crown two inches below the surface of the soil.

Triteleia (*Spring Star Flower*).

A pretty little plant, suitable for either pot culture or the open border, growing six inches high and bearing in April star-shaped, fragrant flowers of a delicate, bluish-white. The bulbs can be supplied from September to December and should be planted in groups or clusters of a dozen or more, covering with two inches of soil. A dozen bulbs can be placed in a five-inch pot or pan and can be grown in the same manner as Crocus.



SPARAXIS.
(See opposite page.)

Tuberoses (*Polianthes Tuberosa*).

One of the most delightfully fragrant and beautiful of the summer-flowering bulbs. By skilful management a succession of flowers may be obtained all the year round. For early flowerers they can be started in February or March in the greenhouse or hot-bed; and for a succession they can be planted at intervals as late as July. For flowering in the open border plant about the middle of May, or as soon as the ground becomes warm. The bulbs can be furnished from December until June.

Tulips.

Tulips have long been one of the most, if not the most, important spring flowers. A few bulbs scattered here and there produce but little effect, but when planted in masses or groups they become at once grand and brilliant. We offer five distinct types of Tulips as under:

Single Early Tulips. This is the most popular group and is used in enormous quantities for bedding, also for forcing. They begin blooming out of doors in the vicinity of Philadelphia about April 15th.

Double Early Tulips. There is a comparatively limited demand for Double Tulips, the flowers being less artistic than the singles. All of the varieties are excellent for bedding, lasting in perfection for a long time, while others, noted in our annual catalogue, are very popular for forcing. They bloom out of doors about April 20th.

Cottage Garden Tulips. A late flowering class that grows yearly in favor, which they deserve because of their beauty and hardiness, making them of special value for permanent borders. They are mostly of tall growth, eighteen to twenty inches high, and bloom about May 10th.

Darwin Tulips. A superb type, having very effective and beautiful globular flowers with more brilliant self-colors than are to be found in any other strain. They grow from twenty-four to thirty inches high and begin blooming about May 15th.

Parrot Tulips. A remarkably showy class, with huge blooms of fantastic form and brilliant coloring, coming into bloom about May 10th.

Outdoor Culture. The grand majority of Tulips are used in formal beds of one color, or a design worked out in two or more colors. The form of the bed, the design and colors used



A BED OF YELLOW AND SCARLET SINGLE EARLY TULIPS.

should always be determined by the individual taste of the planter. For those who are not familiar with the various varieties which go well together and which grow to the same height and bloom at the same time, the selections offered in our autumn catalogue can be depended on to give satisfactory returns.

Tulips do well in any good garden soil and may be planted at any time during the autumn before the ground is closed by frost. For best effect the bulbs should be placed from five to six inches apart, although a very good showing can be made when spaced as much as nine inches each way. In heavy soil, plant them three to four inches deep, in light soil five inches. Being perfectly hardy they require no covering through the winter, but it is well to give them a light covering of leaves, litter, or manure to keep the action of the frost from throwing them out of place.

There is a growing tendency to plant Tulips along the front of shrubbery and in other more or less informal manner. The Cottage Garden and Darwin sorts lend themselves particularly to this style of planting. An English authority says:

"It is a matter for regret that the true beauty of the Tulip has been so long obscured by the manner of its planting in stiff lines or formal beds where the flowers stood in almost regimental array, with little but their own foliage to tone down



COTTAGE GARDEN TULIPS.

the superfluous brilliancy of the mass of color. It is emphatically a flower which requires association with other plants to show its true value. Grown in bold clumps in the mixed border or in irregular groups among the rougher grass, it gives a much better effect."

When Tulips are used in formal beds that are planted in May with summer flowering plants it is customary to lift the bulbs as soon as they have finished flowering and to place them in a trench in some corner of the garden, in which they are allowed to remain until the tops become yellow, denoting that the bulbs are ripe, after which they are taken up, dried off, and placed in a cool, dark

position until time for resetting the following fall. In some soils Tulips expend most of their vitality in producing their crop of flowers, and the new bulbs produced are not sufficiently large to give good returns the following season, and in any case it is safer to depend on newly imported stock each season so as to reduce the chance of failure to a minimum. Where the bulbs have been planted along shrubbery borders or other places where summer planting is not made, it is considered best to lift the bulbs every two or three years, or they become crowded and produce small flowers. When the old flower stems are turning yellow, the bulbs should be taken up, dried and stored till

planting time, or replanted at once, if convenient, as nothing is gained by keeping them out of the ground a long time. A very pretty effect can be made by carpeting beds of Tulips with small, spring-blooming plants such as Cowslips, Forget-me-nots, Pansies, Violas, etc.

Pot Culture: Practically all of the Single Early varieties can be grown in pots for early flowering. Some of the double sorts are also largely forced, particularly the beautiful pink variety, Murillo, and the gay Red and Yellow Tournesol. The

Darwin sorts are beautiful when grown in pots, but must be given more time than the others. Six bulbs can be put in a six-inch pot or pan. Any good friable soil will suit. They can also be grown successfully in the prepared fibre which is now so popular owing to its being clean and easy to handle. The bulbs should have the tips just showing above the soil, and the pots should be placed in a cool cellar, cold frame, or out of doors and covered with soil or ashes until thoroughly rooted, when they may be brought indoors as required and subjected to gentle forcing.

The following cultural notes have been written for us by Miss Ida D. Bennett:

"Tulips succeed best in a rather dry, sunny position. They should be planted about four inches deep; that is, the tip of the bulb should be four inches below the surface of a well-worked



DARWIN TULIPS.